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AGRICULTURAL MEMORANDUM No. 408

Mean calculated actual soil moisture deficits at end of July and August

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The basic data of MAFF Tech Bull No. 24 has been analysed to find the mean calculated actual soil moisture deficits at the end of July and August with the results given in the Appendices, for the period 1940-69 and for each decade.

Regression formulae over the lower rainfall range are as follows:

(R = average annual rainfall)

	End of July Deficit	End of August Deficit
NORTH	6.3 - 0.13R (areas in the far north run to lower deficits as P.T. is lower)	8.6 - 0.23R
MIDLANDS	6.8 - 0.14R	7.5 - 0.17R
EAST	6.5 - 0.12R	9.3 - 0.24R
SOUTHEAST	6.1 - 0.09R	6.2 - 0.09R

Any comments or suggestions on this paper should be referred to the author.

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APPENDIX 1. NORTH

Station (Average)	Average End of July Deficit 1940-49	1950-59	1960-69	Mean	Average End of August Deficit 1940-49	1950-59	1960-69	Mean
Ambleside (74)	0.6	0.4	0.3	0.4	0.5	0.2	0.0	0.2
Bolton (56)	1.1	1.1	0.6	0.9	0.7	0.7	0.3	0.6
Morecambe (38)	2.0	1.9	1.5	1.8	1.9	1.3	0.7	1.3
Ilkley (38)	2.2	2.6	2.1	2.3	1.6	1.5	1.7	1.6
Blackpool (35)	2.4	2.8	2.9	2.7	2.5	2.1	2.7	2.4
Newton Rigg (35)	2.3	2.8	2.0	2.3	1.9	1.4	1.2	1.5
Bellingham (35)	1.7	1.9	1.4	1.7	1.3	1.1	0.6	1.0
Manchester (34)	2.4	1.8	2.4	2.2	1.8	1.5	1.8	1.7
Carlisle (32)	1.9	2.3	2.0	2.1	1.5	1.5	1.0	1.3
Ampleforth (30)	2.4	2.4	2.4	2.4	2.2	1.5	2.1	1.9
Cockle Park (29)	2.4	2.6	1.9	2.3	2.2	2.1	1.5	1.9
Houghall (28)	2.9	3.3	2.0	2.7	2.9	2.2	2.0	2.3
Wakefield (26)	3.1	3.1	3.2	3.1	3.0	2.3	2.8	2.7
Driffield (26)	3.2	3.1	3.0	3.1	3.3	2.2	2.7	2.7
Askham Bryan (26)	3.5	3.3	3.1	3.3	3.4	2.4	2.8	2.9
Tynemouth (26)	3.0	3.4	2.4	2.9	2.9	2.1	2.1	2.3
Hull (25)	3.5	2.8	3.0	3.1	3.7	2.1	2.5	2.8
Berwick (23)	3.0	3.0	2.7	2.9	2.1	2.3	2.3	2.2
Finningley (22)	3.7	3.4	3.1	3.4	4.1	3.0	3.4	3.5

APPENDIX 2. MIDLANDS

	Average End of July Deficit 1940-49	1950-59	1960-69	Mean	Average End of August Deficit 1940-49	1950-59	1960-69	Mean
Hanley (33)	3.0	2.4	1.7	2.4	2.7	1.7	1.5	2.0
Delamere (33)	2.2	2.1	1.7	2.0	2.1	2.0	1.3	1.8
Birmingham (31)	2.7	2.6	2.6	2.6	2.5	2.1	2.6	2.4
Gt. Missenden (30)	3.6	2.6	2.8	3.0	3.5	2.6	2.7	2.9
Walsall (29)	2.9	2.6	2.8	2.8	2.8	2.0	2.6	2.4
Ch. Norton (29)	3.5	3.1	2.7	3.1	3.4	2.6	2.8	2.9
Belper (29)	3.0	2.5	2.7	2.7	2.6	1.9	2.6	2.4
Ross (28)	3.9	3.6	3.2	3.6	3.7	3.6	3.5	3.6
Mansfield (27)	3.5	2.8	3.0	3.1	3.4	2.4	3.2	3.0
Cheltenham (27)	3.9	3.4	2.9	3.4	3.8	2.7	2.8	3.2
Towcester (27)	3.2	2.7	2.8	2.9	3.1	2.6	2.7	2.8
Leicester (26)	3.0	2.2	2.9	2.7	2.9	2.2	2.5	2.5
Shrewsbury (26)	3.6	3.3	3.0	3.3	3.7	2.9	3.1	3.2
Oxford (26)	3.6	3.2	2.9	3.2	3.6	2.9	3.0	3.2
Worcester (25)	3.6	3.7	3.4	3.6	3.4	3.0	3.5	3.3
Leamington (25)	3.6	3.3	3.2	3.4	3.6	3.0	3.4	3.3
Kettering (24)	3.6	3.1	3.8	3.5	3.8	2.8	3.9	3.5
N. Pagnell (24)	3.9	3.0	3.2	3.4	3.9	3.1	3.4	3.5
Ketton (24)	3.4	3.4	3.3	3.4	3.5	3.1	3.4	3.4
Cranwell (23)	3.8	3.2	3.4	3.5	4.0	3.2	3.4	3.5
S. Bonington (23)	3.3	3.2	3.4	3.3	3.2	3.2	3.2	3.2

APPENDIX 3. EAST

Station (Average)	Average End of July Deficit 1940-49	1950-59	1960-69	Mean	Average End of August Deficit 1940-49	1950-59	1960-69	Mean
Swaffham (25)	4.1	3.5	3.2	3.7	4.2	3.1	3.3	3.5
Sprowston (25)	3.8	3.7	3.6	3.7	3.9	3.6	3.4	3.6
Spalding (24)	3.7	3.2	3.6	3.5	3.8	3.0	3.7	3.5
Lowestoft (24)	3.9	4.0	3.6	3.8	3.9	3.8	3.5	3.7
Cleethorpes (24)	3.7	3.1	3.4	3.4	3.9	2.8	3.4	3.4
S. Walden (23)	4.2	3.6	3.7	3.8	4.1	3.6	3.7	3.8
March (23)	3.6	3.3	3.4	3.4	3.9	3.1	3.3	3.5
Sandy (23)	4.2	3.3	3.3	3.6	4.3	3.2	3.4	3.7
K. Lynn (23)	4.2	3.8	3.2	3.7	4.3	3.6	3.4	3.8
H. Peverel (22)	4.4	4.0	3.8	4.1	4.5	4.0	4.1	4.2
Cambridge (22)	4.3	3.3	3.5	3.7	4.1	3.2	3.4	3.6
Mildenhall (22)	4.1	3.6	3.8	3.8	4.2	3.5	3.8	3.9
St. Ives (22)	3.9	3.1	3.6	3.5	4.0	2.9	3.6	3.5
Felixstowe (21)	4.6	4.2	3.9	4.2	4.6	4.4	4.3	4.4

APPENDIX 4. SOUTH-EAST

	Average End of July Deficit 1940-49	1950-59	1960-69	Mean	Average End of August Deficit 1940-49	1950-59	1960-69	Mean
Bodiam (32)	3.8	3.5	2.9	3.4	4.0	3.3	2.8	3.4
Wye (30)	4.0	3.9	3.4	3.7	3.9	3.3	3.4	3.5
Chichester (30)	3.9	3.6	3.4	3.7	3.7	3.4	3.5	3.5
Wantage (29)	3.6	2.8	3.1	3.1	3.6	2.5	3.3	3.1
Rothamsted (28)	3.8	3.2	2.9	3.3	3.9	2.7	3.0	3.2
Portsmouth (28)	4.2	4.1	3.7	4.0	4.1	3.9	3.5	3.8
Wealdstone (27)	3.9	3.7	3.3	3.6	3.9	3.6	3.7	3.7
Croydon (27)	4.0	3.9	3.4	3.8	4.0	4.2	3.4	3.9
E. Malling (27)	3.9	3.9	3.6	3.8	3.8	3.9	3.7	3.8
S. Farnborough (27)	4.0	3.7	3.3	3.7	4.1	3.5	3.4	3.6
Reading (26)	4.0	3.6	3.4	3.7	4.2	3.5	3.5	3.7
Kew (24)	4.1	4.0	3.6	3.9	4.0	3.9	3.8	3.9
Swanley (23)	4.1	4.0	3.7	3.9	4.1	4.0	3.8	4.0
Margate (21)	4.6	4.4	3.9	4.3	4.5	4.4	4.4	4.4

APPENDIX 5. SOUTH-WEST

Station (Average)	Average End of July Deficit 1940-49	1950-59	1960-69	Mean	Average End of August Deficit 1940-49	1950-59	1960-69	Mean
St Austell (48)	2.1	2.1	1.9	2.0	1.7	1.2	1.7	1.5
Plymouth (38)	2.9	2.8	2.4	2.7	2.7	2.1	1.9	2.3
Hartland Pt. (36)	2.7	2.7	2.2	2.5	2.7	1.9	2.1	2.2
Blandford (34)	3.8	3.7	3.7	3.7	3.9	3.7	3.5	3.7
Newquay (34)	3.0	3.3	2.8	3.0	3.3	2.6	3.0	3.0
Marlborough (34)	3.5	2.9	2.9	3.1	3.3	2.5	2.8	2.9
Lizard (33)	3.1	3.3	3.1	3.2	3.3	2.8	3.1	3.2
Bristol (32)	2.8	2.6	2.6	2.7	2.4	2.0	2.4	2.2
Exeter (32)	3.8	3.8	3.4	3.7	4.0	3.8	3.4	3.7
Leckford (32)	3.6	3.2	3.0	3.3	3.4	2.4	2.9	2.9
Bournemouth (31)	4.1	3.6	3.5	3.7	4.0	3.8	3.2	3.7
Cannington (30)	3.1	3.4	3.0	3.2	3.1	3.2	2.9	3.1
Boscombe D (29)	3.8	3.7	3.5	3.7	3.6	3.3	3.6	3.5
Martock (29)	3.8	3.6	3.3	3.6	3.8	3.6	3.3	3.6

APPENDIX 6. WALES

	Average End of July Deficit 1940-49	1950-59	1960-69	Mean	Average End of August Deficit 1940-49	1950-59	1960-69	Mean
Carmarthen (52)	1.5	1.3	0.8	1.2	1.1	0.9	0.1	0.7
Brecon (45)	2.0	2.1	1.9	2.0	1.6	1.6	1.6	1.6
Aberdovey (45)	1.0	1.4	1.0	1.1	1.1	0.7	0.5	0.8
Cardiff (42)	1.8	2.0	2.0	1.9	1.4	1.2	1.5	1.3
New Radnor (42)	2.4	1.9	1.6	2.0	1.9	1.0	1.1	1.3
Pembroke (42)	2.5	2.6	2.7	2.6	2.2	2.0	2.4	2.2
Cardigan (41)	2.2	2.3	2.1	2.2	2.1	1.6	2.0	1.9
Derwen (41)	2.1	1.7	2.0	1.9	1.8	1.2	1.8	1.6
Abergavenny (39)	3.2	2.5	2.5	2.7	2.7	1.9	2.5	2.7
Amlwch (38)	2.8	2.2	1.9	2.3	2.8	1.5	1.4	1.9
Wrexham (35)	2.7	2.8	2.4	2.6	2.7	2.2	2.7	2.5
Welshpool (35)	2.7	2.5	2.4	2.5	2.3	1.3	2.1	1.9
Denbigh (33)	3.1	2.9	3.0	3.0	3.2	2.3	3.4	3.0
Hanmer (30)	3.0	2.5	2.4	2.7	2.9	2.3	2.8	2.7
Llandudno (29)	3.6	3.5	3.3	3.5	3.9	2.9	3.2	3.3